

AMENDMENT UNDER 37 C.F.R. § 1.111
Application No.: 10/717,647

Attorney Docket No.: Q78056

AMENDMENTS TO THE DRAWINGS

Attachment: Replacement Sheets

REMARKS

Objection to the Drawings

The Examiner has objected to Figures 1 and 2 and requires that they be labeled as “Prior Art”. We propose to label Figures 1 and 2 as “RELATED ART”. Submitted herewith are drawings which comply with the Examiner’s requirement.

Claims

Claims 1-7 are the claims pending in the application.

Prior Art Rejections

I. Claims 1, 2, 6 and 7 are rejected under 35 U.S.C. § 102(b) as being anticipated by Tang (Lei Tang, “Methods for encrypting and decrypting MPEG video data efficiently”, 1997, Proceedings of the fourth ACM international conference on Multimedia, pp. 219-229).

According to an exemplary embodiment of the present invention, quantized AC and DC coefficients are encoded to a VLC and VLI. See [0043]-[0044]. The VLI, which is an encoded form of the AC and DC coefficient, is transformed using an encryption key (VLC). [0053]-[0059]. The transformation results in a compressed bitstream.

Accordingly claim 1 recites, *inter alia*, encrypting and compressing a quantized Differential Coefficient (DC coefficient) and a quantized Amplitude Coefficient (AC coefficient) by transforming encoded DC and AC coefficients depending on a certain encryption key at the time of entropy encoding quantized DC and AC coefficients of the quantized DCT coefficients.

Tang discloses a data encryption and compression algorithm. Tang recognizes that after performing DCT and quantization, each coefficient (AC or DC) in the range of [-255, 255].

Therefore, if the bit for expressing the sign is ignored, each coefficient can be represented by eight bits. Now, instead of mapping the coefficients of the 8x8 block to the conventional 1x64 vector, Tang maps the coefficients to the 1x64 vector, wherein the coefficients are permuted, i.e., their positions are changed. Tang does the permutation by creating a permutation list. According to Tang's algorithm, the DC coefficient (represented by an 8 bit number) is split into 2 numbers of 4 bits each. One of the split numbers becomes the value of the DC coefficient and the other split number becomes the value of the last AC coefficient (which is supposed to be zero). Now, the permutation list is applied and the position of the DC coefficient is disguised. To reconstruct the original vector, a decoder needs to know the permutation list and once the order is reconstructed by the decoder, the first (DC) and the last (AC) coefficient are concatenated to get the original DC coefficient back. See Section 4 of Tang.

The Examiner contends that the permutation list of Tang corresponds to the claimed encryption key. See Office Action page 4. The Examiner further contends that the 8x8 block corresponds to the claimed AC and DC coefficients. See Office Action page 4.

However, Tang does not teach or even suggest every feature of claim 1. To the extent Tang teaches reordering the vector list using the permutation list, Tang does not teach or even suggest any transformation of an encoded AC or DC coefficient, using an encryption key. This is because the coefficients that are rearranged are first of all not encoded, and the rearrangement of the order of the coefficients does not correspond to any kind of transformation of the coefficients themselves.

For *at least* the above exemplary reasons, claim 1 is not anticipated by Tang.

Regarding, independent claim 6, this claim is amended to clarify that the certain encryption key is based on a VLC and a VLI of the quantized AC and DC coefficients. In Tang, the encryption key is the permutation list, which is clearly not based on a VLC and a VLI of the quantized AC and DC coefficients. Therefore, claim 6 is not anticipated by Tang.

II. Claims 3-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tang as applied to claim 2 above, and further in view of Shi et al. (hereinafter “Shi”: Changgui Shi and Bharat Bhargava, “An Efficient MPEG Video Encryption Algorithm”, 1998, IEEE, pp381-386).

Claim 3 recites, *inter alia*, transforming the DC coefficient by performing an exclusive logical sum operation between the VLI of the DC coefficient and 11111111 if the determined value is “1”.

The Examiner contends that Shi discloses this feature of claim 3. See Office Action page 6. Shi merely discloses performing an XOR operation on the sign bits of the AC and DC coefficients. More specifically, Shi randomly generates an encryption key, and then performs an exclusive OR between each sign bit of the coefficients and the bits of the encryption key. See the description of $E_k(s)$ on page 383.

There is no teaching or suggestion that the encryption key is 11111111. Further there is no teaching or suggestion that the sign bits of the AC and DC coefficients correspond to the claimed VLI.

Applicant submits that VLI is a term of the art and hence the Examiner cannot interpret VLI as corresponding to just about any bit pattern.

Therefore, claim 3 is patentable over the combination of Tang and Shi, because their combination does not teach every feature of claim 3.

The remaining claims are patentable at least by virtue of their dependency because Shi does not cure the deficiencies of Tang.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

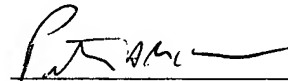
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